

REMARKS

Request for Entry of Amendments

Claim 1 has been amended to rephrase an element based on paragraph [0016] of the application as filed (paragraph [0018] of the application as published), the last sentence. Claim 6 has been amended to clarify subject matter. No new matter has been added. Applicant respectfully requests entry of the amendments and reconsideration of the application in view of the amendments and the following remarks. Applicants believe that entry of the amendment would place the application in better condition for allowance or appeal. The amendment was not previously offered as it was believed that the prior limitation was inherently supported by the application as filed, and Applicants offer the presently added language as a literally supported substitute (with different but related meaning) for the previous language.

Rejections of Claims 1-8 and 23-29 Under 35 U.S.C. § 112

Claims 1-8 and 23-29 have been rejected under 35 U.S.C. § 112, first paragraph, with regard to the limitation of “at a position ... closer to the showerhead than to the susceptor” in Claim 1 and the limitation of “a controller is programmed to activate ...” in Claim 6.

The limitation of “at a position ... closer to the showerhead than to the susceptor” in Claim 1 has been rephrased based on paragraph [0016], the last sentence. The limitation of “a controller is programmed to activate ...” in Claim 6 has been changed back to the original, i.e., “a controller is set to activate ...” Applicant respectfully requests withdrawal of the rejections.

As the objected language has been retracted, Applicants submit that the current claims, and any subsequent claims lacking the “closer” language, should not be interpreted to include the “closer” language and expressly retract all arguments related thereto, consistent with the section of argument below entitled “No Disclaimers or Disavowals.”

Rejections of Claims 1, 6, and 26-27 Under 35 U.S.C. § 103

Claims 1, 6, and 26-27 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Cox et al (US 6418874, hereafter ‘874) in view of Otsubo et al (US 4776918, hereafter ‘918) and Herchen (US 6502529, hereafter ‘529).

The Office Action states that '874 teaches "an RF power generator (bias generator #86, col. 6, line 13) arranged outside the plasma CVD for forming plasma discharge (bias generator #86 is capable of forming/assisting in forming plasma discharge by adjusting power) between the susceptor and showerhead (plasma is between susceptor and showerhead, col. 3, lines 56-58)." *Office Action* at page 3, lines 9-13. However, in '874, the RF power generator is connected to the susceptor, not to the showerhead as recited in Claim 1. In '874, because the RF power generator capacitively couples the substrate to conductive (grounded) inner surfaces of the chamber (col. 6, lines 14-17), and also the toroidal coil is installed in the showerhead, connecting the RF power generator to the showerhead would defeat the purpose of '874 or would be inoperative. The Office Action fails to consider the above.

Further, Claim 1 as amended herein recites, among other things:

an electromagnetic wave generator arranged outside the plasma CVD reactor, the RF power generator, and the remote plasma chamber, for emitting electromagnetic waves to the interior of the reactor, said electromagnetic wave generator being connected to a side wall of the reactor at a position between the showerhead and the susceptor where the showerhead is more irradiated with electromagnetic waves from the electromagnetic wave generator than are all other walls of the reactor.

As the Office Action recognizes (page 4, second paragraph), '874 fails to teach the above features. However, the secondary reference '918 also fails to teach the above features because in Fig. 11 of '918, the waveguide (2) is connected to top of the showerhead, not to a side wall of the reactor between the showerhead and the susceptor. The third reference '529 teaches the electromagnetic energy source connected to a side wall of the reactor between the showerhead and the susceptor (Fig. 1). However, in '529, the electromagnetic energy source is not arranged such that "the showerhead is more irradiated with electromagnetic waves from the electromagnetic wave generator than are all other walls of the reactor" as defined in Claim 1. Due to the structure in Claim 1, electromagnetic wave-assisted cleaning can effectively and uniformly be conducted on the inner surface of the reactor and the showerhead. Thus, even if '874, '918, and '529 are combined, the combination would not produce the above features in combination with the other elements as defined in Claim 1. Therefore, Claim 1 could not be obvious over '847, '918, and '529. Claims 6 and 26-27 also could not be obvious over '847,

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'918, and '529 due to their dependencies upon Claim 1 in addition to the other elements recited therein.

Applicants respectfully request withdrawal of the rejections.

Rejections of Claims 2-4, 7-8, 23, and 28-29 Under 35 U.S.C. § 103

Claim 2-4, 7-8, 23, and 28-29 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over '874, '918, and '529, further in view of Kabansky (US 2002-0179248, hereafter '248).

'248 discloses a microwave connected to an upper part of a reactor and does not supply the deficiencies of '874, '918, and '529 as discussed above in relation to Claim 1. Thus, Claims 2-4, 7-8, 23, and 28-29 could be obvious over '874, '918, '529, and '248 at least due to their dependencies upon Claim 1, in addition to further distinguishing features of particular utility.

Applicants respectfully request that this rejection be withdrawn.

Rejection of Claim 5 Under 35 U.S.C. § 103

Claim 5 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over '874, '918, and '529, further in view of Houchin et al (US 5,202,095, hereafter '095).

'095 discloses a microwave generator connected to an upper part of a reactor and does not supply the deficiencies of '874, '918, and '529 as discussed above in relation to Claim 1. Thus, Claim 5 cannot be obvious over '874, '918, '529, and '248 at least due to its dependency upon Claim 1, in addition to further distinguishing features of particular utility.

Applicants respectfully request withdrawal of the rejection.

Rejections of Claims 24-25 Under 35 U.S.C. § 103

Claims 24-25 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over '874, '918, '529, and '248, further in view of Yanase (US 2002-0117473, hereafter '473).

'473 discloses a microwave connected to an upper part of a reactor and does not supply the deficiencies of '874, '918, '529, and '248 as discussed above in relation to Claim 1. Thus, Claims 24-25 cannot be obvious over '874, '918, '529, '248, and '473 at least due to their dependency upon Claim 1, in addition to further distinguishing features of particular utility.

Applicants respectfully request withdrawal of the rejections.

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CONCLUSION

In light of the Applicant's amendments to the claims and the foregoing Remarks, it is respectfully submitted that the present application is in condition for allowance. The grounds for rejection which are not discussed herein are moot and Applicants expressly do not acquiesce in the findings not separately addressed. Should the Examiner have any remaining concerns which might prevent the prompt allowance of the application, the Examiner is respectfully invited to contact the undersigned at the telephone number appearing below.

No Disclaimers or Disavowals

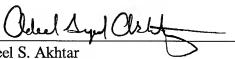
Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, the Applicants are not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. The Applicants reserve the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that the Applicants have made any disclaimers or disavowals of any subject matter supported by the present application.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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